



bürkert
FLUID CONTROL SYSTEMS

SUCCESS STORY

Bürkert < > Rittal

AirLINE Quick valve islands from Bürkert control pneumatic actors in the thick of the hygiene sector.

Closer to the action

Nothing is possible on modern dairy farms without complex monitoring and control systems for liquid media. Pneumatic valves, controlled via automation systems, ensure that interlinked systems of pipes, heaters and stainless steel tanks work exactly. Up to now, pneumatic actuators have been controlled by valve islands installed for reasons of technical cleanliness, among other things, and which were kept in standardised stainless steel enclosures located at a safe distance from the actual application. The new valve “Stainless Steel Quick AirLINE” valve island solution from Bürkert, installed in Hygienic Design enclosures from Rittal, now offers distinct advantages: reduced installation costs, lower susceptibility to interference, and greater economy thanks to the shorter lengths of hose and control cable. How the smart system bears up in hygienic environments, marked by detergent and water, is shown by the new dessert line at FrieslandCampina, which is currently being set up in Gutersloh, in the Germany’s Westphalia region.

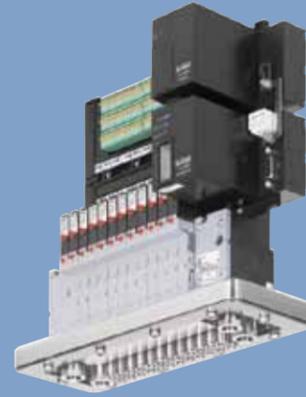
“The name is very much self-explanatory. Our modularly designed ‘AirLINE Quick’ valve islands were introduced as a world first about a year ago,” says Kai-Ulrich Seifer, who supports the food and beverage sector as National Key Account Manager for Bürkert, the supplier of fluid control systems. “Quick installation and highest operational reliability are what counts with the compact Type 8640 valve terminal, installed on a stainless steel mounting plate, and where up to 24 three and four-way pneumatic functions are lined up.” Thanks to the mounting and adapter plate, the ready-to-connect pneumatic block can be directly integrated into the enclosure base, owing to its tailor-made cut-outs. This way, the use of components in the enclosure is considerably reduced. “The advantage of Quick AirLINE is that we manufacture the external adapter, including the hose connection technology, out of solid V2A stainless steel – and this choice of materials offers resistance to aggressive cleaning agents,” stressed Mr. Seifer, underlining the fact that the need for pneumatic tubes in the enclosure is now completely eliminated. “While commercially available mounting plates made of aluminium start to ‘bloom’ after a certain number of cleaning cycles, stainless steel has proven resistant to the most aggressive ‘wash down’ attacks - and in the long term remains permanently spotless.”



The hygienic design pneumatic housings are available in 3 standard widths at constant constructional height and depth. This enables a flexible adaption, enclosures standing shoulder-to-shoulder in close proximity of the valve nodes - and thus installed right in the middle of the hygiene-sensitive process field.



Valve island type 8640 with Profibus DPV1, 24 valve nodes and 24 digital inputs. Increased process safety through check valves in R+S channel and HotSwap function (pneumatic barrier).



Left: Dairy foreman Tim Borgstedt, Deputy Head of the 'Preparation Department' at FrieslandCampina in Gutersloh.
Right: Kai-Ulrich Seifer, National Key Account Manager for the food and beverage sector at Bürkert, the providers of fluid control systems.



Healthy in the thick of the hygiene sector

In terms of hygiene technology, the new Type 8614 automation system from Bürkert is optimised by the smart combination of stainless steel enclosures from the Rittal's Hygienic Design (HD) series. These HD enclosures, fully tailored to the high hygiene standards of the food industry, can be easily cleaned on site. "Only through the symbiosis of AirLINE Quick with the Rittal HD modular system are we now fully able to tap the potential of our valve islands with the stainless steel adapter plate - and we can now offer a complete solution that can be effectively used in such hygienic applications as in dairies and breweries," Seifer added. While using aggressive cleaning agents on conventional enclosures repeatedly causes leakages through porous seals, Bürkert is on the safe side with its Type 8614 automation system and the installation of robust "AirLINE Quick" systems in HD enclosures.

Typical design features such as the 30-degree sloping roof or the overhanging roof with horizontal drip edge ensure that liquids are drained from the HD enclosures quickly and safely. This way, no residues that can solidify are left on the enclosure during cleaning. Columns, external hinges or inaccessible spaces that can act as breeding grounds for microorganisms have been systematically eliminated. One guarantee for the permanent sealing of the HD enclosure is the blue silicone gasket that is resistant to all kinds of detergents. It is located on the outside and seals the door and enclosure safely. "Made from one piece, the silicone seal can be replaced in next to no time during preventive maintenance, so that it always in top condition," explains Heinz Schmitt, who is responsible for industry management in the food and luxury consumables sector at Rittal.

Three standard widths offer many possibilities

To place the stainless steel twin pack of AirLINE quick and HD specifically in the market, Bürkert provides three standard widths of HD enclosure with constant heights and depths. Besides a 390-mm wide version, there is also the AirLINE Quick solution, which permits a flow of up to 300 litres per minute in each valve, and which is available in standard widths of 510 and 760 mm. While the two smaller enclosures each provide space for a block with a maximum of 32 pneumatic functions, two valve blocks are installed in the larger enclosures. A total of up to 64 pneumatic hoses can be connected in the latter. When installed in HD enclosures, the user does not have to do without the Bürkert system's proven service-friendly HotSwap function either. Thanks to the pneumatic barrier, individual valves can be shut off during operation without any interruption to the valve island's air supply. At Bürkert, major process safety features such as check valves in R + S channel form part of the process technological design of the valve islands. The automation system, which provides IP 65 class protection, can accommodate a maximum of 96 external control signals such as digital position indicators, which, as an option, can be directly assigned to each of the pilot valves. More sophisticated control systems such as I/O systems with digital and analog input and output groups can also be quickly and securely mounted on a separate rail. The external AirLINE Quick adapter plate has stainless steel pneumatic connectors to permit the rapid connection of pneumatic hoses, while control cables and bus lines are entered via detergent-resistant stainless steel or plastic fittings.

Reduced installation costs

"The motto with which we introduced our innovative automation system in the Hygienic Design enclosure from Rittal with integrated valve island at the 'Brau' ('Brewing') and SPS/IPC/Drives 2011 was 'Closer to the action', and it signalled the official launch" said Mr. Seifer, adding that: "Even befo-



Almost 2,000 pneumatic process actuators and solenoid valves are required in order to precisely control the very different media in FrieslandCampina's highly complex system.



"Where once 20, 30 or even 50 metres had been necessary, sometimes just five metres are enough to get from the enclosure to the actuator or sensor with this optimised installation."

Kai-Ulrich Seifer (National Key Account Manager Bürkert Fluid Control Systems)



re SPS/IPC/Drives, nearly 150 automation systems had been sold and in some case installed, so that we were able to start off with a product that was already proven in practice." The new solution offers compelling benefits for users: Short distances to actuators and sensors, significantly shorter times and reduced costs for installing pneumatic hoses and control cables, quick detection of any possible hose leaks, better monitoring and maintenance of the overall system, a low air consumption, as well as substantial improvements in the hygiene of the entire system. Innovation also shows its strengths in terms of cost-benefit ratio: In many cases, the additional costs of new 'local' systems can be offset by the savings of hundreds of metres of hose and cable.

In use at FrieslandCampina

Bürkert's system installed in a new dessert and yoghurt line at FrieslandCampina in Gutersloh counts as a reference project. It is a collaboration between FrieslandCampina, Bürkert and the Stuttgart-based VA Group, which has been planning and installing processing equipment for the food industry since 1993. Already, 300,000 litres of fresh milk are processed every day in Gutersloh for dessert and yoghurt products. This capacity has been significantly increased by the construction of a new production building and the launch of a flexible production line for blancmange and yoghurt products, which will be completely linked up by mid-2012, following the completion of no less than five parallel packaging lines. The dessert line has been running since the autumn of 2011; the finished products are currently being filled in pots, sealed and packed in suitable in appropriate containers for shipping by three packaging machines just in a matter of seconds.

In designing and installing the complex production line, consisting of a computer-controlled circuit with a branched out network of stainless steel pipes, pumps, mixers, heaters and sterile tanks that can hold up to 12,000 litres, the Stuttgart plant engineers relied on the use of

the compact Bürkert Type 8614 system, the "Quick AirLINE" valve islands in the HD enclosure. Almost 2,000 pneumatic process components are needed to precisely inject and help circulate the most diverse media in the highly complex system, in which an automatic "clean-in-place" (CIP) cleaning and disinfection system for all the piping and tanks is also integrated. Several kilograms of heavy pneumatic actuators are installed – equipped with initiators for optical status query in huge pneumatic nodes. They are laid out so well at the Gutersloh plant that they can be reached via walk-in metal catwalks for quick and easy servicing. The process valve nodes, which control which medium is currently being moved and in which dosage – are controlled by a total of 42 HD enclosures, each with 24-fold AirLINE Quick valve islands, including digital feedback inputs.

In the configuration designed for FrieslandCampina, for electrical connection with a Profibus DP, the bulk of the pneumatic enclosures are lined up in rank and file very close to the valve nodes and are thus installed right in the middle of the hygiene-sensitive process field. "Where once 20, 30 or even 50 metres had been necessary, sometimes just five metres are enough to get from the enclosure to the actuator or sensor with this optimised installation," Mr. Seifer explained. Cost reductions are further reinforced by the fact that the entire system is of "hygienic" construction. This, in turn, reduces the costs of the cleaning process.

"For us, pneumatic enclosures so close to the process took some getting used to – especially since we have always had to be careful in the past when cleaning" said dairy foreman Tim Borgstaedt, who as Deputy Head of the 'Preparation Department' with its 35 employees at FrieslandCampina in Gutersloh, is not only in charge of choosing the right ingredients and the appropriate product mix, but is also responsible for the absolutely vital hygiene. "We still find it bit difficult to take when we mistreat AirLINE Quick valve islands in HD enclosures with detergents and high-pressure cleaners. However, we noticed a long time ago that these necessary cleaning procedures are quite unproblematic!"

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